



Installation

This chapter provides information on the following topics:

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- [Mounting the Router](#)
- [Installing the Router](#)
- [Using the Router LEDs to Check Links](#)
- [Configuring the Router](#)

Preparing for Installation








This section provides information on safety, mounting the router, and unpacking the contents of the router box.

Safety

This section provides safety warnings and electrostatic and router damage information for the Cisco 827 routers and SOHO 77 routers.

Warnings

Before installing the router, read the following warnings:

- 
Warning Only trained and qualified personnel should be allowed to install or replace this equipment.
- 
Warning Read the installation instructions before you connect the system to its power source.
- 
Warning Before working on a system that has a standby/off switch, turn the power to standby and unplug the power cord.
- 
Warning Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.
- 
Warning To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.
- 
Warning Ultimate disposal of this product should be handled according to all national laws and regulations.
- 
Warning If the symbol of suitability with an overlaid cross (ⓧ) appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe injury or damage your router.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) is a transfer of electrostatic charge between bodies of different electrostatic potentials, such as an operator and a piece of electrical equipment. It occurs when electronic components are improperly handled, and it can damage equipment and impair electrical circuitry. Electrostatic discharge is more likely to occur with the combination of synthetic fibers and dry atmosphere.

Always use the following ESD-prevention procedures when removing and replacing components:

Step 1 Wear an ESD-preventive wrist strap that you provide, ensuring that it makes good skin contact.



Caution

To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. Always observe the warnings in the preceding section, “[Safety](#).”

Step 2 Do not touch any exposed contact pins or connector shells of interface ports that do not have a cable attached.

If cables are connected at one end only, do not touch the exposed pins at the unconnected end of the cable.



Note

This device is intended for use in residential and commercial environments only.



Caution

Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Unpacking the Box

[Table 2-1](#) lists the items that come with your router. All these items are in the accessory kit that is inside the box that your router came in. If any of the items is missing or damaged, contact your customer service representative.

Table 2-1 Router Box Contents

- | |
|---|
| • Power cord (black) |
| • Desktop power supply |
| • Console cable, RJ-45-to-DB-9 (light blue) |
| • ADSL cable (lavender) |
| • Ethernet cable (yellow) |
| • Product documentation |

To prepare for installation, follow these steps:

-
- Step 1** Obtain the ADSL line.
- Step 2** Remove the yellow Ethernet cable, light blue console cable, lavender ADSL cable, product documentation, and Cisco 800 Documentation CD-ROM from the Open Me First bag. Remove the desktop power supply and the black power cord from the accessory kit. Gather the Ethernet devices to be connected to the router: hub, server, workstation, or PC.
- Step 3** If you plan to connect an analog telephone or fax machine, gather these devices. You must also provide the telephone cable to connect each device (this cable is usually provided with the device).
- Step 4** If you plan to configure the software using a terminal or PC connected to the router, provide the terminal or PC.
- Step 5** If you plan to use the cable lock feature available on the Cisco 827, SOHO 77, and Cisco 827-4V routers, you must provide a Kensington or equivalent locking cable.
-

Preventing Router Damage

Follow these guidelines when connecting devices to your router:

- Connect the color-coded cables supplied by Cisco Systems to the color-coded ports on the back panel.
- If you must supply your own cable, see [Appendix A, “Specifications and Cables,”](#) for cabling specifications. If this appendix does not provide specifications for a particular cable, we strongly recommend ordering the cable from Cisco Systems.
- If the symbol of suitability (☒) appears above a port, you can connect the port directly to a public network that follows the European Union standards.



Warning

If the symbol of suitability with an overlaid cross (☒) appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe injury or damage to your router.

Mounting the Router

You can mount the router on one of the following surfaces:

- Table or other horizontal surface
- Wall or other vertical surface

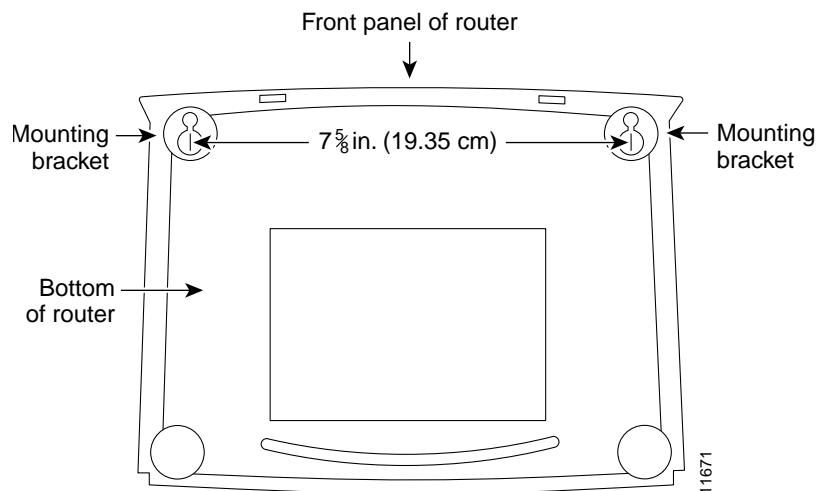
Mounting on a Table

Do not cover or obstruct the router vents, which are located on the sides of the router.

Mounting on a Wall

You can mount the router on a wall or other vertical surface by using the molded mounting brackets on the bottom of the router and two number-six, 3/4-in. (M3.5 x 20 mm) screws. You must provide the screws. [Figure 2-1](#) shows the mounting brackets.

Figure 2-1 Wall-Mounting Brackets (Bottom of Router)



Caution

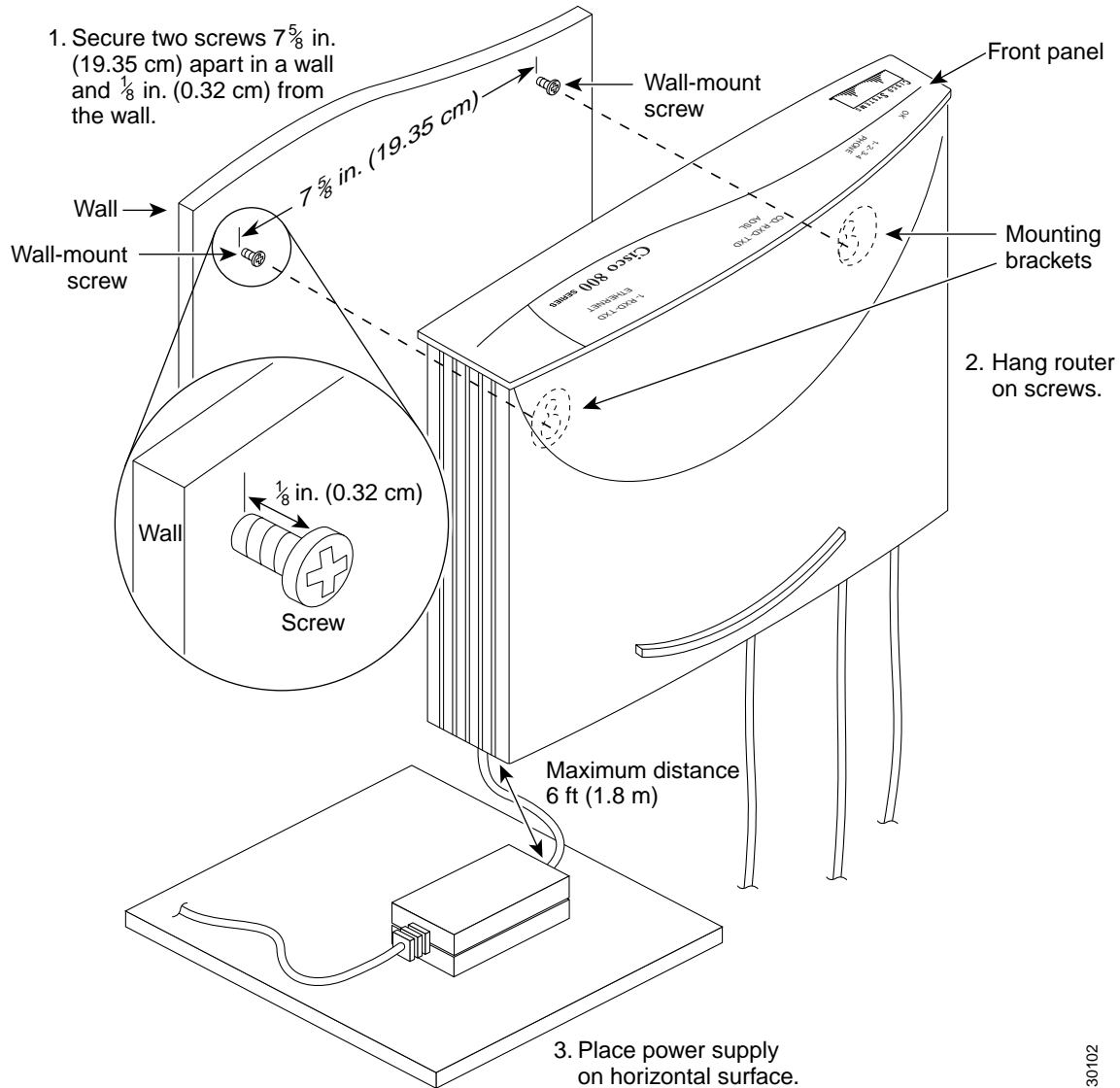
If you are mounting the router on drywall, use three hollow-wall anchors to secure the three 1/8-in. (M3) screws. If the screws are not properly anchored, the strain of the network cable connections could pull the router from the wall. Use the drill bit size that is specified by the hollow-wall anchor manufacturer.

The following requirements must be met when you mount the router:

- Because the LEDs are used as status and problem indicators, the LEDs on the front panel must face upward and be easily visible.
- The back panel must face downward to reduce strain on the cable connections.
- The power supply must rest on a horizontal surface, such as the floor or a table. If the power supply is not supported, strain on the power supply cable could cause it to disconnect from the connector on the router back panel.

To mount the router, follow the steps in [Figure 2-2](#). The last page of this manual provides a template for measuring the distance between the screws.

Figure 2-2 *Mounting Router on a Wall*



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Installing the Router

To install the router, you need to perform the following tasks in the following order:

1. Connect the Ethernet devices to the router.
2. Connect the ADSL line.
3. Connect an optional analog telephone or fax machine.

4. Connect a terminal or PC to the router for software configuration using the command-line interface (CLI) or for troubleshooting.
5. Connect the router to the power source.
6. Verify the links using the router LEDs.

Connect Ethernet Devices

Table 2-2 lists the Ethernet devices you can connect to Cisco 827, Cisco 827-4V, and SOHO 77 routers; the connections for each device; and the settings of the router TO HUB/TO PC button (the default setting is IN).

Table 2-2 Ethernet Device Connections for Cisco 827, Cisco 827-4V, and SOHO 77 Routers

Network Device Connected To Router	Router Port	Ethernet Cable Type ¹	Router HUB/NO HUB Button Setting	Network Device Button Setting ²
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 1	Straight-through	IN	MDI (IN)
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 1	Straight-through	OUT	MDI-X (OUT)
Hub without equivalent to router TO HUB/TO PC button	ETHERNET port 1	Straight-through	OUT	MDI-X (OUT)
Server, PC, or workstation	ETHERNET port 1	Straight-through	OUT	–

1. Cisco provides a yellow straight-through cable. You provide crossover or additional straight-through cables. For details on cables, see [Appendix A, “Specifications and Cables.”](#)
2. Hub vendors choose different names for the button that controls the cable selection. This table uses the Cisco 1528 Micro Hub 10/100 with an MDI/MDI-X button as an example. Determine the button name and setting for your particular hub. Refer to your hub documentation for details.

Table 2-3 lists the Ethernet devices you can connect to Cisco 827H and SOHO 77H routers, the connections for each device, and the settings of the router TO HUB/TO PC button (the default setting is IN).

Table 2-3 Ethernet Device Connections for Cisco 827H and SOHO 77H Routers

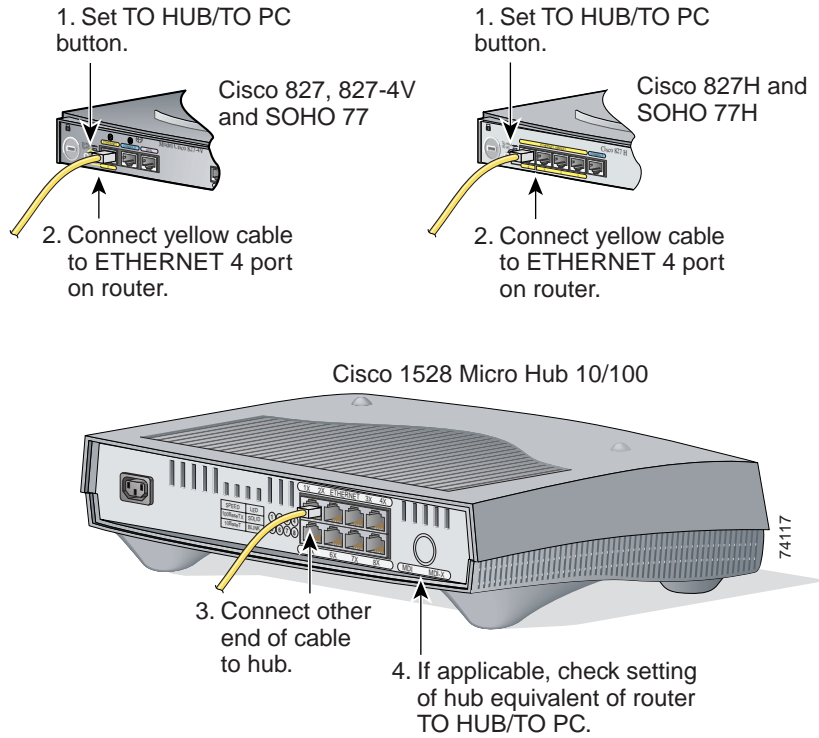
Network Device Connected to Router	Router Port	Ethernet Cable Type ¹	Router TO HUB/TO PC Button Setting	Network Device Button Setting ²
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 4	Straight-through	IN	MDI (IN)
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 4	Straight-through	OUT	MDI-X (OUT)
Hub without equivalent to router TO HUB/TO PC button	ETHERNET port 4	Straight-through	OUT	MDI-X (OUT)
Server, PC, or workstation	ETHERNET port 4	Straight-through	OUT	–
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 1, 2, 3	Crossover	N/A	MDI (IN)
Hub with equivalent to router TO HUB/TO PC button	ETHERNET port 1, 2, 3	Straight-through	N/A	MDI-X (OUT)
Hub without equivalent to router TO HUB/TO PC button	ETHERNET port 1, 2, 3	Crossover	N/A	MDI-X (OUT)
Server, PC, or workstation	ETHERNET port 1, 2, 3	Straight-through	N/A	–

1. Cisco provides a yellow straight-through cable. You provide crossover or additional straight-through cables. For cable specifications, see [Appendix A, “Specifications and Cables.”](#)
2. Hub vendors choose different names for the button that controls the cable selection. This table uses the Cisco 1528 Micro Hub 10/100 with an MDI/MDI-X button as an example. Determine the button name and setting for your particular hub. See your hub documentation for details.

Connecting Hubs

Before connecting a hub to the router, see [Table 2-2](#) to determine how to set the router TO HUB/TO PC button. To connect a hub to the router, follow the steps in [Figure 2-3](#).

Figure 2-3 Connecting a Hub to the Router



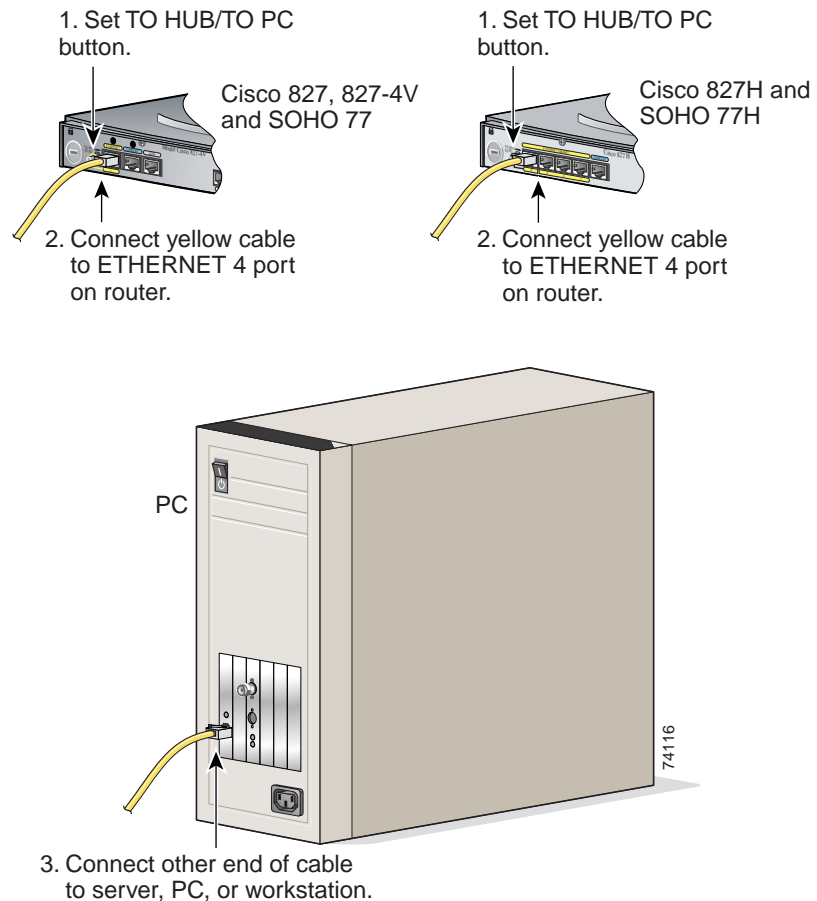
To verify the hub connection, check that the port's Ethernet LED on the front panel is on after you complete the router installation.

Connecting a Server, PC, or Workstation

Before connecting a server, PC, or workstation to the router, see [Table 2-2 on page 2-7](#) to determine how to set the router TO HUB/TO PC button.

To connect a server, PC, or workstation to the router, follow the steps in [Figure 2-4 on page 2-10](#).

Figure 2-4 Connecting a Server, PC, or Workstation to the Router



To verify the connection, check that the Ethernet 1 LED is on after you complete the router installation.

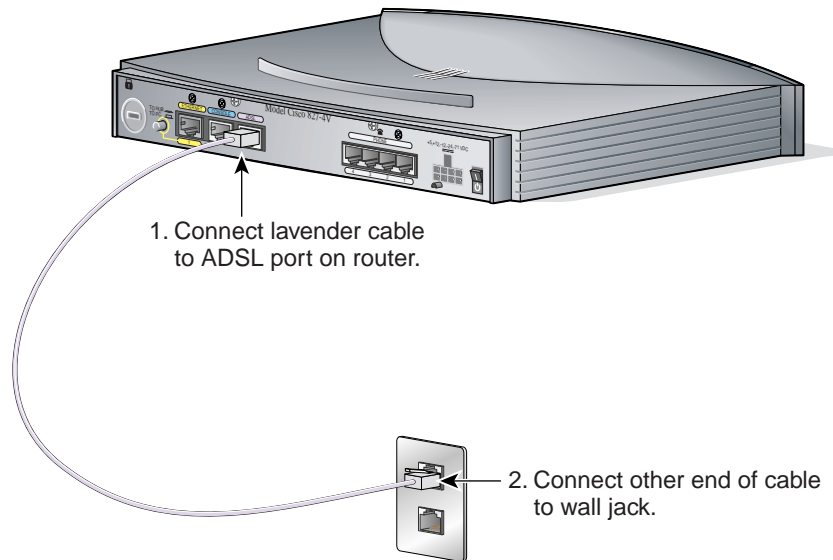
Connect an ADSL Line

The procedure for connecting an ADSL line depends on the router and, in some cases, on the location. [Figure 2-5](#) shows how to connect the ADSL line to a cable wall jack. ([Figure 2-5](#) depicts a Cisco 827-4V router, but the process is the same for Cisco 827, Cisco 827H, SOHO 77, and SOHO 77H routers.)



Do not work on the system or connect or disconnect cables during periods of lightning activity.

Figure 2-5 Connecting an ADSL Line to a Wall Jack

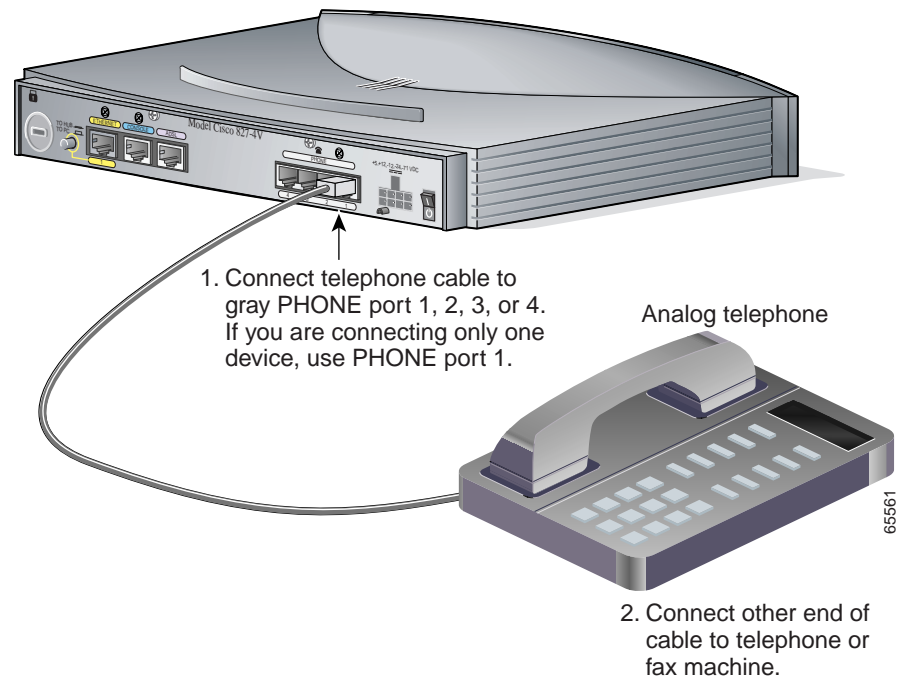


Connect an Analog Telephone or Fax Machine (Cisco 827-4V Routers Only)

You can connect as many as four devices such as analog push button telephones or fax machines to a Cisco 827-4V router. Each device is connected to basic telephone services through the color-coded gray phone ports.

To connect an analog telephone or fax machine, follow the steps in [Figure 2-6](#). You must provide the telephone cable for connecting each device. The telephone cable is usually provided with the device.

Figure 2-6 Connecting an Analog Telephone or Fax Machine



Warning

This equipment contains a ring signal generator (ringer), which is a source of hazardous voltage. Do not touch the RJ-11 (phone) port wires (conductors), the conductors of a cable connected to the RJ-11 port, or the associated circuit-board when the ringer is active. The ringer is activated (indicated by a clicking sound) by an incoming call.



Caution

Do not connect the router telephone ports to the telephone wall jack. These ports are not meant for direct connection to a public network. This connection can damage your router.

The gray phone ports are RJ-11 connectors. If you are outside North America, you must buy and attach adapters that allow telephones or fax machines to be connected to these RJ-11 connectors. In some countries, these adapters need additional electronics so that the telephones or fax machines will work properly with the router phone ports. For example, in the United Kingdom, you must buy an adapter that also provides a *master socket*, which causes incoming calls to ring the connected devices. For information on recommended master sockets, see [Table 2-4](#).

Table 2-4 Recommended Vendors for Master Sockets Required for United Kingdom

Vendor Name	Product Name	For More Information
RS Components	Avro Pacific Telephone Ring Adapter (part number 303-2000)	http://www.rswww.com/
Tandy	Export Adapter (part number 2797057)	http://www.tandy.co.uk/

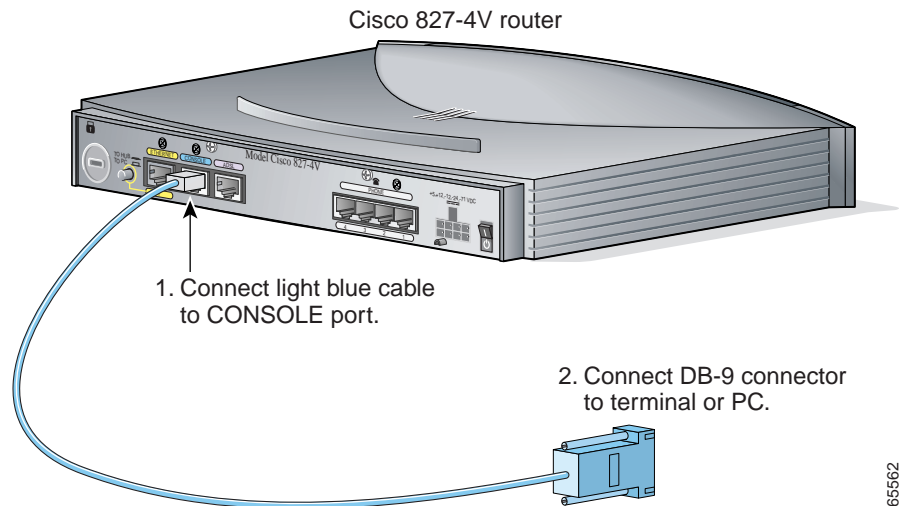
Connect a Terminal or PC to the Router's Console Port (Optional)

You can connect either a terminal or a PC to the router's console port. You can use the terminal or PC for configuring the software via the command line interface (CLI) or for troubleshooting. To connect a terminal or PC, follow the steps in [Figure 2-7](#). ([Figure 2-7](#) depicts a Cisco 827-4V, but the process applies to connecting all Cisco 827 series routers and SOHO 77 series routers.)



Note

Unless you are an experienced network administrator, it is recommended that you use the Cisco Router Web Setup software to configure the router. Use of this software is described in the [“Using Cisco Router Web Setup to Configure the Router”](#) section on page 2-16.

Figure 2-7 Connecting a Terminal or PC

If you have experience configuring Cisco routers and prefer to use the CLI, refer to the *Cisco 827 Router Software Configuration Guide* for instructions on configuring the router.

Connect the AC Adapter

To connect the power supply, follow the steps in [Figure 2-8](#). ([Figure 2-8](#) depicts a Cisco 827-4V router, but the process is the same for the Cisco 827, Cisco 827H, SOHO 77, and SOHO 77H routers.)



Warning

The device is designed to work with TN power systems.



Warning

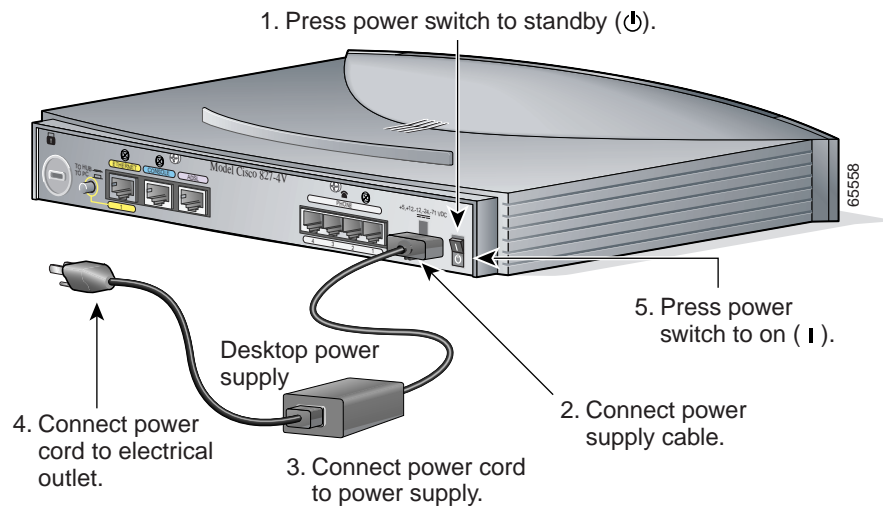
This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 16A international) is used on the phase conductors (all current-carrying conductors).



Warning

This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.

Figure 2-8 Connecting the AC Adapter



Note

Be sure to use the power supply that was shipped with your router. Although you may be able to connect another Cisco power supply to your router, that power supply may not provide all the features that the power supply that shipped with your router does.

Using the Router LEDs to Check Links

Use the LEDs on the front of the router to check the links between the router and attached Ethernet devices or telephones. Use [Table 2-5](#) to verify the link status of devices attached to Cisco 827, Cisco 827-4V, and SOHO 77 routers.

Table 2-5 LED Patterns for Cisco 827, Cisco 827-4V and SOHO 77 Routers

Power/Link	LEDs to Check	Normal Patterns
Power	OK	On
To hub, server, PC, or workstation	ETHERNET 1, ETHERNET RXD, and ETHERNET TXD	<ul style="list-style-type: none"> ETHERNET 1 is on when the Ethernet is physically connected. ETHERNET RXD blinks when an Ethernet port receives an Ethernet packet. ETHERNET TXD blinks when an Ethernet port sends an Ethernet packet.
To analog telephone or fax machine (827-4V only)	PHONE 1, PHONE 2, PHONE 3, PHONE 4 ¹	On when telephone or fax machine is in use.

1. You can also pick up the handset and listen for a dial tone.

Use [Table 2-6](#) to verify the link status of devices attached to Cisco 827H and SOHO 77H routers.

Table 2-6 LED Patterns for Cisco 827H and SOHO 77H Routers

Power/Link	LEDs to Check	Normal Patterns
Power	OK	On
To hub, server, PC, or workstation	ETHERNET 1, 2, 3, or 4; ETHERNET RXD; and ETHERNET TXD	<ul style="list-style-type: none"> ETHERNET LED is on when the Ethernet is physically connected to the appropriate port. RXD LED blinks when an Ethernet port receives an Ethernet packet. TXD LED blinks when an Ethernet port sends an Ethernet packet.

Configuring the Router

When you have finished installing the router, you must configure the router software. First, check PC configurations to ensure that all PCs will be able to communicate with the router. Then configure the router software using the web interface.

Checking the PC Configuration

Each PC that is connected to the router must be configured to use the Transmission Control Protocol/Internet Protocol (TCP/IP) and to obtain its IP address automatically. Follow these steps to configure each PC that is running Microsoft Windows NT or Microsoft Windows 95 or 98. If the PC is running a different version of Microsoft Windows, refer to the documentation that came with the PC.

-
- Step 1** Start the PC, and open the Control Panel.
 - Step 2** Click the **Network** icon to display the Network window.
 - Step 3** Verify that TCP/IP has been added and associated with the Ethernet adapter. TCP/IP is shown as a cable icon in the Configuration window on Microsoft Windows 95 and 98; it is shown as a cable icon in the Protocol window on Microsoft Windows NT. If the icon is not visible, click **Add**, and add the Microsoft TCP/IP protocol.
 - Step 4** To verify that the PC is configured to obtain an IP address automatically, click the TCP/IP cable icon, and select the **IP address** tab in the TCP/IP Properties window. Check **Obtain an IP address from a DHCP server** if it is not checked. The IP address and Subnet mask fields should be greyed out.
 - Step 5** Click **OK** to accept all changes and exit this window, and click **OK** in the Network window.
 - Step 6** To reboot the PC, click **Yes** if you are prompted.
-

For more information on how to configure TCP/IP, refer to the *Cisco Router Web Setup Troubleshooting Guide*, which is available on the Cisco 800 and SOHO Series Product Documentation CD.

Using Cisco Router Web Setup to Configure the Router

Cisco strongly recommends that inexperienced network administrators use the Cisco Router Web Setup application that has been installed on the router. To use this application, complete the following steps:

-
- Step 1** Start, or restart, one of the PCs connected to the router through ETHERNET port 1, 2, 3, or 4.
 - Step 2** Open a web browser. Make sure that your browser is set to work in online mode.
 - In Internet Explorer, click the File menu, and verify that the work offline option is unchecked.
 - In Netscape, the default selection in the File menu is set to work online.
 - Step 3** Type in the universal resource locator (URL) **http://10.10.10.1**. The CRWS home page will appear in one or two minutes.

**Tip**

If the CRWS home page does not appear when you enter the URL **http://10.10.10.1**, test the connection between the PC and the router by doing the following:

1. Check that the OK LED on the router is on, and check the cable connection between the router and the PC. Be sure that the TO HUB/TO PC button is in the correct position. The button is in the correct position if the LED for the port on the front of the router is on.
2. If the CRWS home page still does not appear, verify that the web browser's "work offline" option is disabled.
3. If the web page still does not appear, verify that your PC is automatically configured to receive an IP address. Follow the instructions in the *Cisco Router Web Setup Troubleshooting Guide*, which is available on the Cisco 800 and SOHO Series Product Documentation CD.
4. If the PC is configured to automatically receive an IP address, but the web page still does not appear, select **Start/Run**, type **winipcfg** in the Run window, and examine the address in the IP address field. The address should be in the format 10.10.10.X, in which X is a number that is equal or greater than 2; for example, 10.10.10.2, or 10.10.10.3. If the IP address is not in this format, verify that an Ethernet adapter name is visible in the Adapter field. If there is no name in the field, return to [Step 3](#) in "Checking the PC Configuration," add TCP to the list of protocols. Then return to "Using Cisco Router Web Setup to Configure the Router, page 2-16," and complete the procedure.

- Step 4** If you have no special configuration requirements, click the **Router Setup** link on the home page, and then click **Easy Setup**. (This may appear as **Quick Setup** on some models.) Then, enter the user name and password provided to you by your Internet service provider, and click **Apply**.
- Step 5** If you need to configure special features such as Network Address Translation (NAT), click the appropriate links on the home page, and complete the configuration screens.
- Step 6** Click the **Password** link on the home page, and set a password for the router.
- Step 7** Click the **Test Connection** link on the home page, and allow the connection to be tested.
- Step 8** Select **Start/Run**, and type **winipcfg** in the Open field of the Run window. When the IP Config window appears, click **Release** to release the PC's IP address. Then click **Renew** to renew the PC's IP address. Alternatively, open the Run window and enter **ipconfig /release** to release the PC's IP address. Then enter **ipconfig /renew** to renew the IP address of the PC.
- Step 9** Open a web browser on the PC, and connect to a website.

The router installation is complete when you have connected to a website.

